0067338

SAF-B05-018
Horseshoe Landfill Residual Pesticide Sampling – Soil
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan 2 copies clipped NJP 10-18-05
INITIAL/DATE

COMMENTS:

SDG H3206 SAF-B05-018

Date: 5 October 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Horseshoe Landfill Residual Pesticide Sampling – Soil – Waste Site 600-270
Subject: PCB/Pesticide/Herbicide - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03CJ3	6/7/05	Soil	C	See note 1
J03CJ4	6/7/05	Soil	C	See note 1
J03CJ5	6/7/05	Soil	C	See note 1
J03CJ6	6/7/05	Soil	C	See note 1
J03CJ7	6/7/05	Soil	C	See note 1
J03CJ8	6/7/05	Soil	C	See note 1
J03CJ9	6/7/05	Soil	C	See note 1, 2 & 3
J03CH8	6/7/05	Soil	C	See note 1
J03CH9	6/7/05	Soil	C	See note 1
J03CJ0	6/7/05	Soil	C	See note 1
J03CJ1	6/7/05	Soil	C	See note 1
J03CJ2	6/7/05	Soil	C	See note 1
J03CH3	6/7/05	Soil	C	See note 1, 2 & 3
J03CH4	6/7/05	Soil	C	See note 1
J03CH5	6/7/05	Soil	C	See note 1
J03CH6	6/7/05	Soil	C	See note 1
J03CH7	6/7/05	Soil	C	See note 1

1 – Pesticides by 8081A.
2 - PCBs by 8082 and chlorinated pesticides by 8151A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

One field blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations.

Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike recovery outside QC limits (122%), all detected 4,4-DDD results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicate samples (J03CJ7 & J03CJ8) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All undetected methoxychlor, toxaphene, dalapon, dichloroprop and 2,4-DB results exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H3206 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (122%), all detected 4,4-DDD results were qualified as estimates and flagged "J".

- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB/PESTICIDE/HERBICIDE DATA QUALIFICATION SUMMARY*

SDG: H3206	REVIEWER: TLI	Project: 600-270	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
4,4DDD	J	All detects	MSD
Toxaphene	J	All	No MS, MSD or LCS

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PESTICIDE/PCB/HERBICIDE ANALYSIS, SOIL MATRIX, (UG/KG) Page__1__ of__3__

Project: BECHTEL-HANFORD																			
Laboratory: LLI	SDG: H3206																		
Sample Number												J03CJ9							
Remarks												E. Blank							
Sample Date												6/7/05							
Extraction Date												6/12/05							
Analysis Date												6/15/05							
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	NA		NA		NA		NA		NA		NA		13	U	NA		NA		NA	
Aroclor-1221	20	NA		NA		NA		NA		NA		NA		13	U	NA		NA		NA	
Aroclor-1232	20	NA		NA		NA		NA		NA		NA		13	U	NA		NA		NA	
Aroclor-1242	20	NA		NA		NA		NA		NA		NA		13	U	NA		NA		NA	
Aroclor-1248	20	NA		NA		NA		NA		NA		NA		13	U	NA		NA		NA	
Aroclor-1254	20	NA		NA		NA		NA		NA		NA		13	U	NA		NA		NA	
Aroclor-1260	20	NA		NA		NA		NA		NA		NA		13	U	NA		NA		NA	
Sample Number		J03CJ3		J03CJ4		J03CJ5		J03CJ6		J03CJ7		J03CJ8		J03CJ9		J03CH8		J03CH9		J03CJ0	
Remarks												Duplicate		E. Blank							
Sample Date		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05	
Extraction Date		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05	
Analysis Date		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/14/05		6/15/05		6/15/05	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Beta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Delta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Gamma-BHC (Lindane)	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Heptachlor	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Aldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Heptachlor Epoxide	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Endosulfan I	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.2		1.7	U	1.7	U	1.7	U	1.7	U
Dieldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
4,4'-DDE	5	64		150		140		220		540		640		3.3	U	460		150		26	
Endrin	5	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U
Endosulfan II	5	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U
4,4'-DDD	5	2.6	J	5.9	J	1.9	J	6.3	J	12	J	13	J	3.3	U	69	J	7.8	J	3.3	U
Endosulfan Sulfate	5	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U
4,4'-DDT	5	25		70		23		110		170		210		3.3	U	420		92		9.1	
Methoxychlor	5	17	U	17	U	17	U	17	U	17	U	17	U	17	U	17	U	17	U	17	U
Endrin Ketone	5	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U	3.3	U	3.3	U	3.4	U	3.3	U	3.3	U
Endrin Aldehyde	5	3.3	U	3.3	U	3.3	U	3.3	U	4.5		3.3	U	3.3	U	2.3		3.3	U	3.3	U
alpha-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
gamma-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Toxaphene	5	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

PESTICIDE/PCB/HERBICIDE ANALYSIS, SOIL MATRIX, (UG/KG) Page__2__ of__3__

Project: BECHTEL-HANFORD																					
Laboratory: Lionville Laboratory Inc.																					
Case:	SDG: H3206																				
Sample Number						J03CH3															
Remarks																					
Sample Date						6/7/05															
Extraction Date						6/12/05															
Analysis Date						6/15/05															
PCB/Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q						
Aroclor-1016	20	NA		NA		14	U	NA		NA		NA		NA							
Aroclor-1221	20	NA		NA		14	U	NA		NA		NA		NA							
Aroclor-1232	20	NA		NA		14	U	NA		NA		NA		NA							
Aroclor-1242	20	NA		NA		14	U	NA		NA		NA		NA							
Aroclor-1248	20	NA		NA		14	U	NA		NA		NA		NA							
Aroclor-1254	20	NA		NA		14	U	NA		NA		NA		NA							
Aroclor-1260	20	NA		NA		14	U	NA		NA		NA		NA							
Sample Number		J03CJ1		J03CJ2		J03CH3		J03CH4		J03CH5		J03CH6		J03CH7							
Remarks																					
Sample Date		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05							
Extraction Date		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05		6/12/05							
Analysis Date		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05							
Pesticide		Result	Q	Result	Q	Result	Q	Result		Result	Q	Result	Q	Result	Q						
Alpha-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Beta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Delta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Gamma-BHC (Lindane)	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Heptachlor	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Aldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Heptachlor Epoxide	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Endosulfan I	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	36							
Dieldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
4,4'-DDE	5	310		51		3.4	U	150		78		190		1300							
Endrin	5	3.4	U	3.4	U	3.4	U	3.4	U	3.3	U	3.5	U	3.5	U						
Endosulfan II	5	3.4	U	3.4	U	3.4	U	3.4	U	3.3	U	3.5	U	3.5	U						
4,4'-DDD	5	8.1	J	1.9	J	3.4	U	7.4	J	2.7	J	9.5	J	150	J						
Endosulfan Sulfate	5	3.4	U	3.4	U	3.4	U	3.4	U	3.3	U	3.5	U	3.5	U						
4,4'-DDT	5	110		24		3.4	U	82		27		140		1700							
Methoxychlor	5	17	U	17	U	17	U	17	U	17	U	18	U	18	U						
Endrin Ketone	5	3.4	U	3.4	U	3.4	U	3.4	U	3.3	U	3.5	U	3.5	U						
Endrin Aldehyde	5	2.4		3.4	U	3.4	U	3.4	U	3.3	U	3.5	U	3.5	U						
alpha-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
gamma-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.8	U						
Toxaphene	5	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	180	UJ	180	UJ						

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

000012

PESTICIDE/PCB/HERBICIDE ANALYSIS, SOIL MATRIX, (UG/KG) Page__3__ of__3__

Project: BECHTEL-HANFORD																					
Laboratory: Lionville Laboratory Inc.																					
Case:	SDG: H3206																				
Sample Number		J03CJ9		J03CH3																	
Remarks		E. Blank																			
Sample Date		6/7/05		6/7/05																	
Extraction Date		6/14/05		6/14/05																	
Analysis Date		6/17/05		6/17/05																	
Chlorinated Herbicides	RQL	Result	Q	Result	Q	Result	Q	Result	Q												
Dalapon	100	170	U	170	U																
Dicamba	100	67	U	68	U																
Dichloroprop	100	170	U	170	U																
2,4-D	100	33	U	34	U																
2,4,5-TP (Silvex)	100	17	U	17	U																
2,4,5-T	100	17	U	17	U																
2,4-DB	100	170	U	170	U																
Dinoseb	100	17	U	17	U																

000013

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 06/15/05 10:45

RFW Batch Number: 0506L713 Client: TNU-HANFORD B05-018 Work Order: 11343606001 Page: 1

	Cust ID:	J03CJ9	J03CH3	J03CH3	J03CH3	PBLKMY	PBLKMY BS
Sample Information	RFW#:	007	013	013 MS	013 MSD	05LE0490-MB1	05LE0490-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	81 %	102 %	92 %	98 %	90 %	90 %
	Decachlorobiphenyl	115 %	117 %	112 %	120 %	108 %	111 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	14 U	112 %	125 %	13 U	110 %
Aroclor-1221		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1232		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1242		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1248		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1254		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1260		13 U	14 U	119 %	132 %	13 U	118 %

0000147

10/1/05

6/15/05

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 06/17/05 13:40

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1

	Cust ID:	J03CJ3	J03CJ4	J03CJ5	J03CJ6	J03CJ7	J03CJ8
Sample Information	RFW#:	001	002	003	004	005	006
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	94 %	81 %	85 %	89 %	86 %	99 %
	Tetrachloro-m-xylene	76 %	95 %	73 %	76 %	75 %	84 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Beta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Delta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Aldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan I		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.2
Dieldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDE		64	150	140	220	540	640
Endrin		3.3 U	3.3 U	3.4 U	3.3 U	3.3 U	3.3 U
Endosulfan II		3.3 U	3.3 U	3.4 U	3.3 U	3.3 U	3.3 U
4,4'-DDD		2.6 J	5.9 J	1.9 J	6.3 J	12 J	13 J
Endosulfan sulfate		3.3 U	3.3 U	3.4 U	3.3 U	3.3 U	3.3 U
4,4'-DDT		25	70	23	110	170	210
Methoxychlor		17 U	17 U	17 U	17 U	17 U	17 U
Endrin ketone		3.3 U	3.3 U	3.4 U	3.3 U	3.3 U	3.3 U
Endrin aldehyde		3.3 U	3.3 U	3.4 U	3.3 U	4.5	3.3 U
alpha-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Toxaphene		170 U J	170 U J	170 U J	170 U J	170 U J	170 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

10/1/05

	Cust ID:	J03CJ9	J03CH8	J03CH9	J03CJ0	J03CJ1	J03CJ2
Sample Information	RFW#:	007	008	009	010	011	012
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	93 %	88 %	92 %	102 %	95 %	94 %
	Tetrachloro-m-xylene	68 %	70 %	71 %	83 %	78 %	78 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Beta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Delta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Aldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan I		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dieldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDE		3.3 U	460	150	26	310	51
Endrin		3.3 U	3.4 U	3.3 U	3.3 U	3.4 U	3.4 U
Endosulfan II		3.3 U	3.4 U	3.3 U	3.3 U	3.4 U	3.4 U
4,4'-DDD		3.3 U	69 J	7.8 J	3.3 U	8.1 J	1.9 J
Endosulfan sulfate		3.3 U	3.4 U	3.3 U	3.3 U	3.4 U	3.4 U
4,4'-DDT		3.3 U	420	92	9.1	110	24
Methoxychlor		17 U	17 U	17 U	17 U	17 U	17 U
Endrin ketone		3.3 U	3.4 U	3.3 U	3.3 U	3.4 U	3.4 U
Endrin aldehyde		3.3 U	2.3 J	3.3 U	3.3 U	2.4 J	3.4 U
alpha-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Toxaphene		170 UJ	170 UJ	170 UJ	170 UJ	170 UJ	170 UJ

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

0000016

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 06/17/05 13:40

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 3

	Cust ID:	J03CH3	J03CH3	J03CH3	J03CH4	J03CH5	J03CH6
Sample Information	RFW#:	013	013 MS	013 MSD	014	015	016
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	101 %	91 %	101 %	94 %	92 %	93 %
	Tetrachloro-m-xylene	83 %	75 %	83 %	80 %	79 %	78 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	91 %	100 %	1.7 U	1.7 U	1.8 U
Beta-BHC		1.7 U	90 %	96 %	1.7 U	1.7 U	1.8 U
Delta-BHC		1.7 U	102 %	109 %	1.7 U	1.7 U	1.8 U
gamma-BHC (Lindane)		1.7 U	92 %	101 %	1.7 U	1.7 U	1.8 U
Heptachlor		1.7 U	93 %	101 %	1.7 U	1.7 U	1.8 U
Aldrin		1.7 U	93 %	103 %	1.7 U	1.7 U	1.8 U
Heptachlor epoxide		1.7 U	94 %	101 %	1.7 U	1.7 U	1.8 U
Endosulfan I		1.7 U	99 %	105 %	1.7 U	1.7 U	1.8 U
Dieldrin		1.7 U	102 %	109 %	1.7 U	1.7 U	1.8 U
4,4'-DDE		3.4 U	106 %	113 %	150	78	190
Endrin		3.4 U	105 %	111 %	3.4 U	3.3 U	3.5 U
Endosulfan II		3.4 U	98 %	105 %	3.4 U	3.3 U	3.5 U
4,4'-DDD		3.4 U	115 %	122 * %	7.4 J	2.7 J	9.5 J
Endosulfan sulfate		3.4 U	96 %	103 %	3.4 U	3.3 U	3.5 U
4,4'-DDT		3.4 U	82 %	90 %	82	27	140
Methoxychlor		17 U	158 %	159 %	17 U	17 U	18 U
Endrin ketone		3.4 U	97 %	103 %	3.4 U	3.3 U	3.5 U
Endrin aldehyde		3.4 U	94 %	99 %	3.4 U	3.3 U	3.5 U
alpha-Chlordane		1.7 U	95 %	102 %	1.7 U	1.7 U	1.8 U
gamma-Chlordane		1.7 U	95 %	102 %	1.7 U	1.7 U	1.8 U
Toxaphene		170 U J	170 U	170 U	170 U J	170 U J	180 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

10/1/05

	Cust ID:	J03CH7		PBLKMY		PBLKMY BS	
Sample Information	RFW#:	017		05LE0490-MB1		05LE0490-MB1	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG	
Surrogate: Decachlorobiphenyl		93	%	85	%	89	%
Tetrachloro-m-xylene		76	%	76	%	77	%
Alpha-BHC		1.8	U	1.7	U	93	%
Beta-BHC		1.8	U	1.7	U	88	%
Delta-BHC		1.8	U	1.7	U	100	%
gamma-BHC (Lindane)		1.8	U	1.7	U	93	%
Heptachlor		1.8	U	1.7	U	92	%
Aldrin		1.8	U	1.7	U	95	%
Heptachlor epoxide		1.8	U	1.7	U	96	%
Endosulfan I		36		1.7	U	96	%
Dieldrin		1.8	U	1.7	U	99	%
4,4'-DDE		1300		3.3	U	107	%
Endrin		3.5	U	3.3	U	100	%
Endosulfan II		3.5	U	3.3	U	96	%
4,4'-DDD		150	J	3.3	U	108	%
Endosulfan sulfate		3.5	U	3.3	U	95	%
4,4'-DDT		1700		3.3	U	100	%
Methoxychlor		18	U	17	U	133	%
Endrin ketone		3.5	U	3.3	U	94	%
Endrin aldehyde		3.5	U	3.3	U	90	%
alpha-Chlordane		1.8	U	1.7	U	95	%
gamma-Chlordane		1.8	U	1.7	U	96	%
Toxaphene		180	U J	170	U	170	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000078

10/1/05

Lionville Laboratory, Inc.
Herbicides, Special List
Report Date: 06/17/05 12:39

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1

	Cust ID:	J03CJ9	J03CH3	J03CH3	J03CH3	PBLKNA	PBLKNA BS
Sample Information	RFW#:	007	013	013 MS	013 MSD	05LE0499-MB1	05LE0499-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate: DCAA	110 % fl	41 % fl	48 % fl	48 % fl	130 % fl	119 % fl
Dalapon	170 U	170 U	45 %	44 %	170 U	103 %
Dicamba	67 U	68 U	39 %	39 %	67 U	115 %
Dichloroprop	170 U	170 U	55 %	49 %	170 U	119 %
2,4-D	33 U	34 U	33 %	32 %	33 U	117 %
2,4,5-TP (Silvex)	17 U	17 U	60 %	64 %	17 U	127 %
2,4,5-T	17 U	17 U	34 %	34 %	17 U	127 %
2,4-DB	170 U	170 U	45 %	50 %	170 U	136 %
Dinoseb	17 U	17 U	89 %	79 %	17 U	134 %

000019

VR 10/1/05

6/21/05

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B05-018
LVL #: 0506L713
SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00
Date Received: 06-09-2005

PCB

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-12-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received Silica Gel, Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3630C, 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/8/05
Date

som\r:\group\data\pest\tnu hanford\0506-713.pcb

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B05-018
LVL #: 0506L713
SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00
Date Received: 06-09-2005

CHLORINATED PESTICIDES

Seventeen (17) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-12-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-14,15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. One (1) of forty (40) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/8/05
Date

som\r:\group\data\pest\tnu hanford\0506-713.pes

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR) SDR#: 050C261

Initiator: M. McAnally
Date: 6/17/05
Client: TMV Hanford

Batch: 0506L713
Samples: -013 MSD
Method: SW846/MCAWW/CLP/

Parameter: 0608H
Matrix: Soil
Prep Batch: 0JF0490

1. Reason for SDR

a. COC Discrepancy ___ Tech Profile Error ___ Client Request ___ Sampler Error on C-O-C ___ Transcription Error ___ Wrong Test Code ___ Other _____

b. General Discrepancy

___ Missing Sample/Extract ___ Container Broken ___ Wrong Sample Pulled ___ Label ID's Illegible
___ Hold Time Exceeded ___ Insufficient Sample ___ Preservation Wrong ___ Received Past Hold
___ Improper Bottle Type ___ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

- MSD recovery for DDD was high @ 122% (range: 50-120).
- MS, MSS were ok.
- no hits for DDD in sample -013

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

___ Re-log
___ Entire Batch
___ Following Samples: _____
___ Re-leach
___ Re-extract
___ Re-digest
___ Revise EDD
___ Change Test Code to _____
___ Place On/Take Off Hold (circle)

Narrate

4. Project Manager Instructions...signature/date: 6/17/05

✓ Concur with Proposed Action
___ Disagree with Proposed Action; See Instruction
___ Include in Case Narrative
___ Client Contacted:
Date/Person _____
___ Add
___ Cancel

5. Final Action...signature/date: _____ Other Explanation:

___ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
___ Hard Copy COC Revised
___ Electronic COC Revised
___ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
___	X Initiator	___	___ Metals: Beegle
___	X Lab General Manager: M. Taylor	___	___ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson/Haslett	___	___ GC/LC: Kiger
___	X Technical Mgr: Wesson/Daniels	___	___ MS: Rychlak/Layman
___	X QA (file): Alberts	___	___ Log-in: Melnic
___	___ Data Management: Feldman	___	___ Admin: Soos
___	___ Sample Prep: Beegle/Kiger	___	___ Other: _____

000023

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B05-018
LVL #: 0506L713
SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00
Date Received: 06-09-2005

HERBICIDE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-14-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-17-2005. The extraction and analysis procedures were based on method 8151A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

2. Samples were extracted and analyzed within required holding time.

3. The method blank was below the reporting limits for all target compounds.

4. All surrogate recoveries were within acceptance criteria.

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. The initial calibrations associated with this data set were within acceptance criteria.

8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/8/05
Date

scm\r:\group\data\herb\tnu\0506-713.doc

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0506L713

Bechtel Hanford Inc. — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B05-018-001 | Page 3 of 4

Collector: Doug Bowers	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Project Designation: Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location: Horse Shoe Landfill		SAF No.: B05-018
Ice Chest No.: ERC03106	Field Logbook No.: EL 1173-5	COA: R602702000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES/ LIONVILLE	Offsite Property No.: A050238		Bill of Lading/Air Bill No.: 5052090

Price Code: Air Quality — Data Turnaround: 7 day

POSSIBLE SAMPLE HAZARDS/REMARKS: NA

Special Handling and/or Storage: NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 [2,4-Dichlorophenoxyacetic acid]	Pesticides - 8081	PCBs - 8082				
Sample No.	Matrix *	Sample Date	Sample Time							
J03CJ3	SOIL	6-7-05	0919				X			10
J03CJ4	SOIL		0822				X			11
J03CJ5	SOIL		0824				X			12
J03CJ6	SOIL		0827				X			13
J03CJ7	SOIL		0830				X			14

0006325

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	6-7-05/1615	Ref 2C 3728	6-7-05/1615
Ref 2C 3728	6805 1030	SIGNATURE	6805 1030
SIGNATURE	6805 1030 ETC	FED EX	
FedEx	6-9-05 1000		6-9-05 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) [Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc]; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref# 2C on 6/8/05

Matrix *: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 1 of 1
Collector Doug Bowers	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code Air Quality
Project Designation Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location Horse Shoe Landfill		SAF No. B05-018	Data Turnaround 7 day
Ice Chest No. SRC 03 106	Field Logbook No. EL 1173-5	COA R602702000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A050 238		Bill of Lading/Air Bill No. SEBTOSIPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NT

Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				
SAMPLE ANALYSIS	See Item (1) in Special Instructions	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 (2,4-Dichlorophenoxyacetic acid)	Pesticides - 8081	PCBs - 8082				
Sample No.	Matrix *	Sample Date	Sample Time							
J03CJ8	SOIL	6-7-05	0931					X				#15
J03CJ9	SOIL	6-7-05	0730	X	X	X	X	X	X			Full suite

92029(51)

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	6-7-05/1615	Ref 2C 3728	6-7-05/1615
Ref 2C 3728	6805 1030	[illegible]	6805 1030
[illegible] ERC	6805 1030	FED EX	
FedEx	6-9-05 1000	[illegible]	6-9-05 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 6/8/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 2 of 4
Collector: Doug Bowers	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Air Quality	Data Turnaround: 7 day
Project Designation: Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location: Horse Shoe Landfill		SAF No.: B05-018		
Ice Chest No.: ERC 03 106	Field Logbook No.: EL 1173-5	COA: R602702000	Method of Shipment: Fed Ex		
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A050238		Bill of Lading/Air Bill No.: 5675059C		

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250mL	250mL	250mL	500mL	120mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 (2,4-Dichlorophenoxyacetic acid)	Pesticides - 8081	PCBs - 8082					

Sample No.	Matrix *	Sample Date	Sample Time									
220008 J03CH8	SOIL	6-7-05	0804					X				#5
9 J03CH9	SOIL		0807					X				6
10 J03CJ0	SOIL		0811					X				7
11 J03CJ1	SOIL		0813					X				1
12 J03CJ2	SOIL		0816					X				2

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers	Date/Time: 6-7-05/1615	Received By/Stored In: Ref 2C 3728	Date/Time: 6-7-05/1615
Relinquished By/Removed From: REF 2C 3728	Date/Time: 6805 1030	Received By/Stored In: SIGNATURE/DATE	Date/Time: 6805 1030
Relinquished By/Removed From: SIGNATURE/DATE	Date/Time: 6805 ERC 1030	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 6-9-05 1000	Received By/Stored In:	Date/Time: 6-9-05 1000
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) [Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc]: Mercury - 7471 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 6/8/05

Matrix *: S=Soil; SE=Sediment; SO=Solid; SI=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title		Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 1 of 4
Collector: Doug Bowers	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: Air Quality : 7 day
Project Designation: Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location: Horse Shoe Landfill		SAF No.: B05-018	
Ice Chest No.: ERC 03106	Field Logbook No.: EL 1173-5	COA: R602702000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A0502138		Bill of Lading/Air Bill No.: 3225 05 FC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 (2,4-Dichlorophenoxy acetic acid)	Pesticides - 8081	PCBs - 8082			
J03CH3	SOIL	6-7-05	0741	X	X	X	X	X	X			stockpile
J03CH4	SOIL		0752					X				#1
J03CH5	SOIL		0755					X				2
J03CH6	SOIL		0759					X				3
J03CH7	SOIL		0801					X				4

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	6-7-05/1615	REF 2C 3728	6-7-05/1615
REF 2C 3728	6805 1030	S JOALES/	6805 1030
S JOALES/	ERC 6805 1030	FED EX	
Fed Ex	6905 1000		6905 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) [Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc]; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2C on 6/8/05

Matrix *: S=Soil; SE=Sediment; SO=Solid; SI=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-270			DATA PACKAGE: H3206		
VALIDATOR: TLF		LAB: LCI		DATE: 9/26/05	
			SDG: H3206		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	8151A	
SAMPLES/MATRIX					
J03CH3	J03CH4	J03CH5	J03CH6	J03CH7	
J03CJ9	J03CH8	J03CH9	J03CJ0	J03CJ2	
J03CJ3	J03CJ4	J03CJ5	J03CJ6	J03CJ8	
J03CJ7	J03CJ1				
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... (Yes) No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes (No) N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments:
J03CJ9 - FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... (Yes) No N/A
Surrogate recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: MSD 4,4-DDD - 122% J all detects
J03CJ3
no toxaphene MS/MSD/LCS

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... (Yes) No N/A
Duplicate results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
Field duplicate RPD values acceptable? ..... (Yes) No N/A
Field split RPD values acceptable? ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: No toxaphene MS/MSD - Jaq

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No (N/A)
Positive results resolved acceptably? ..... Yes No (N/A)
Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A
Sample holding times acceptable? ..... (Yes) No N/A
Comments:

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	(N/A)
Compound quantitation acceptable? (Levels D, E)	Yes	No	(N/A)
Results reported for all requested analyses?	(Yes)	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	(N/A)
Samples properly prepared? (Levels D, E)	Yes	No	(N/A)
Detection limits meet RDL?	Yes	(No)	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: dicamba, dichloroprop, 2,4-DB, toxaphene, methoxyclor

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed?	Yes	No	N/A
Lot check performed?	Yes	No	N/A
Check recoveries acceptable?	Yes	No	N/A
GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

Date: 5 October 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Horseshoe Landfill Residual Pesticide Sampling – Soil – Waste Site 600-270
Subject: Volatile - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Method
J03CJ9	6/7/05	Soil	C	8260C
J03CH3	6/7/05	Soil	C	8260C

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all methylene chloride results were qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria.

Eight analytes were reported above the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. H3206-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, all methylene chloride results were qualified as undetected, raised to the RQL and flagged "U".

Eight were reported above the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

VOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3206	REVIEWER: TLL	Project: 600-270	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U at RQL	All	Method blank contamination

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX (ug/Kg)

Project: BECHTEL-HANFORD					
Laboratory: LLI					
Case:	SDG: H3206				
Sample Number		J03CJ9		J03CH3	
Remarks				E. Blank	
Sample Date		6/7/05		6/7/05	
Analysis Date		06/13/05		06/13/05	
VOA	RQL	Result	Q	Result	Q
Chloromethane	10	12	U	10	U
Bromomethane	10	12	U	10	U
Vinyl Chloride	10	12	U	10	U
Chloroethane	10	12	U	10	U
Methylene Chloride	10	10	U	10	U
Acetone	10	12	U	10	U
Carbon Disulfide	10	6	U	5	U
1,1-Dichloroethene	10	6	U	5	U
1,1-Dichloroethane	10	6	U	5	U
1,2-Dichloroethene (total)	10	6	U	5	U
Chloroform	10	6	U	5	U
1,2-Dichloroethane	10	6	U	5	U
2-Butanone	10	12	U	10	U
1,1,1-Trichloroethane	10	6	U	5	U
Carbon Tetrachloride	10	6	U	5	U
Bromodichloromethane	10	6	U	5	U
1,2-Dichloropropane	10	6	U	5	U
cis-1,3-Dichloropropene	10	6	U	5	U
Trichloroethene	10	6	U	5	U
Dibromochloromethane	10	6	U	5	U
1,1,2-Trichloroethane	10	6	U	5	U
Benzene	10	6	U	5	U
trans-1,3-Dichloropropene	10	6	U	5	U
Bromoform	10	6	U	5	U
4-Methyl-2-pentanone	10	12	U	10	U
2-Hexanone	10	12	U	10	U
Tetrachloroethene	10	6	U	5	U
1,1,2,2-Tetrachloroethane	10	6	U	5	U
Toluene	10	6	U	5	U
Chlorobenzene	10	6	U	5	U
Ethylbenzene	10	6	U	5	U
Styrene	10	6	U	5	U
Xylene	10	6	U	5	U
cis-1,2-Dichloroethene	10	6	U	5	U
trans-1,2-Dichloroethene	10	6	U	5	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize mis-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 06/17/05 07:33

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1a

	Cust ID:	J03CJ9	J03CH3	J03CH3	J03CH3	VBLKVU	VBLKVU BS
Sample Information	RFW#:	007	013	013 MS	013 MSD	05LVG182-MB1	05LVG182-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.16	0.962	1.06	0.926	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	104 %	105 %	97 %	96 %	97 %	95 %
	Bromofluorobenzene	102 %	106 %	97 %	94 %	94 %	98 %
	1,2-Dichloroethane-d4	109 %	112 %	111 %	111 %	99 %	102 %
Chloromethane		12 U	10 U	11 U	9 U	10 U	10 U
Bromomethane		12 U	10 U	11 U	9 U	10 U	10 U
Vinyl Chloride		12 U	10 U	11 U	9 U	10 U	10 U
Chloroethane		12 U	10 U	11 U	9 U	10 U	10 U
Methylene Chloride		10 ~~B~~ U	10 ~~B~~ U	12 B	11 B	3 J	3 BJ
Acetone		12 U	10 U	11 U	9 U	10 U	10 U
Carbon Disulfide		6 U	5 U	6 U	5 U	5 U	5 U
1,1-Dichloroethene		6 U	5 U	112 %	111 %	5 U	101 %
1,1-Dichloroethane		6 U	5 U	6 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	5 U	6 U	5 U	5 U	5 U
Chloroform		6 U	5 U	6 U	5 U	5 U	5 U
1,2-Dichloroethane		6 U	5 U	6 U	5 U	5 U	5 U
2-Butanone		12 U	10 U	11 U	9 U	10 U	10 U
1,1,1-Trichloroethane		6 U	5 U	6 U	5 U	5 U	5 U
Carbon Tetrachloride		6 U	5 U	6 U	5 U	5 U	5 U
Bromodichloromethane		6 U	5 U	6 U	5 U	5 U	5 U
1,2-Dichloropropane		6 U	5 U	6 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	5 U	6 U	5 U	5 U	5 U
Trichloroethene		6 U	5 U	119 %	114 %	5 U	102 %
Dibromochloromethane		6 U	5 U	6 U	5 U	5 U	5 U
1,1,2-Trichloroethane		6 U	5 U	6 U	5 U	5 U	5 U
Benzene		6 U	5 U	109 %	105 %	5 U	98 %
Trans-1,3-Dichloropropene		6 U	5 U	6 U	5 U	5 U	5 U
Bromoform		6 U	5 U	6 U	5 U	5 U	5 U
4-Methyl-2-pentanone		12 U	10 U	11 U	9 U	10 U	10 U
2-Hexanone		12 U	10 U	11 U	9 U	10 U	10 U
Tetrachloroethene		6 U	5 U	6 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	5 U	6 U	5 U	5 U	5 U
Toluene		6 U	5 U	119 %	117 %	5 U	104 %

*= Outside of EPA CLP QC limits.

10/1/05

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1b

Cust ID:	J03CJ9	J03CH3	J03CH3	J03CH3	VBLKVU	VBLKVU BS
RFW#:	007	013	013 MS	013 MSD	05LVG182-MB1	05LVG182-MB1
Chlorobenzene	6 U	5 U	117 %	114 %	5 U	101 %
Ethylbenzene	6 U	5 U	6 U	5 U	5 U	5 U
Styrene	6 U	5 U	6 U	5 U	5 U	5 U
Xylene (total)	6 U	5 U	6 U	5 U	5 U	5 U
cis-1,2-dichloroethene	6 U	5 U	6 U	5 U	5 U	5 U
trans-1,2-dichloroethene	6 U	5 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

10/1/05

210012

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B05-018
LVL #: 0506L713
SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00
Date Received: 06-09-2005

GC/MS VOLATILE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 06-13-2005.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were analyzed within required holding time.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/8/05
Date

som\group\data\voa\tnu-hanford\0506-713.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 1 of 1
Collector Doug Bowers	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code / Data Turnaround
Project Designation Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location Horse Shoe Landfill		SAF No. B05-018	Air Quality / 7 day
Ice Chest No. SRC 03 106	Field Logbook No. EL 1173-5	COA R602702000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A050 238		Bill of Lading/Air Bill No. SEE 05[illegible]	

POSSIBLE SAMPLE HAZARDS/REMARKS
NA

Special Handling and/or Storage
NA

	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 {2,4-Dichlorophenoxyacetic acid}	Pesticides - 8081	PCBs - 8082				

Sample No.	Matrix *	Sample Date	Sample Time	See item (1)	VOA	Semi-VOA	Chloro-Herbicides	Pesticides	PCBs				
J03CJ8	SOIL	6-7-05	0931					X				#15	
J03CJ9	SOIL	6-7-05	0730	X	X	X	X	X	X			Full suite	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Doug Bowers Doug Bowers	6-7-05/1615	Received By/Stored In: Ref 2C 3728	6-7-05/1615
Relinquished By/Removed From: REF 2C 3728	6805 1030	Received By/Stored In: [signature]	6805 1030
Relinquished By/Removed From: [signature] ERC	6805 1030	Received By/Stored In: FED EX	
Relinquished By/Removed From: FedEx	6905 1000	Received By/Stored In: [signature]	6-9-05 1000
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 6/8/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

090015

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 1 of 1
Collector Doug Bowers	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code Air Quality	Data Turnaround 7 day
Project Designation Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location Horse Shoe Landfill		SAF No. B05-018		
Ice Chest No. ERC 03106	Field Logbook No. EL 1173-5	COA R602702000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A0502138		Bill of Lading/Air Bill No. 5225 05 PC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 (2,4-Dichlorophenoxyacetic acid)	Pesticides - 8081	PCBs - 8082			
J03CH3	SOIL	6-7-05	0741	X	X	X	X	X	X			stock 1,1,0
J03CH4	SOIL		0752					X				#1
J03CH5	SOIL		0755					X				2
J03CH6	SOIL		0759					X				3
J03CH7	SOIL		0801					X				4

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	6-7-05/1615	REF ZC 3728	6-7-05/1615
REF ZC 3728	6805 1030	SOALES/Jack	6805 1030
SOALES/Jack ERC	6805 1030	FED EX	
FED EX	6-7-05 1000		6-7-05 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # ZC on 6/8/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100 600-270			DATA PACKAGE: H3206		
VALIDATOR: TLI		LAB: LLI		DATE: 9/24/05	
			SDG: H3206		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J03CJ9 J03CH3					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: methylene chloride – U at RQL

no PB

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PA

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... (Yes) No N/A

MS/MSD RPD values acceptable? ..... (Yes) No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)

MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)

Field duplicate RPD values acceptable? ..... Yes No (N/A)

Field split RPD values acceptable? ..... Yes No (N/A)

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No (N/A)

Iinternal standard areas acceptable? ..... Yes No (N/A)

Internal standard retention times acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Transcription/calculation errors? ..... Yes No (N/A)

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A

Sample holding times acceptable? ..... (Yes) No N/A

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	N/A
Compound quantitation acceptable? (Levels D, E)	Yes	No	N/A
Results reported for all requested analyses?	Yes	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: 6 over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

Date: 5 October 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Horseshoe Landfill Residual Pesticide Sampling – Soil – Waste Site 600-270
Subject: Semivolatile - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03CJ9	6/7/05	Soil	C	See note 1
J03CH3	6/7/05	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RQL and flagged "U".

Due to method blank contamination, the di-n-butylphthalate and diethylphthalate results in sample J03WCJ9 were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits.

If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike duplicate (13%) and LCS (8%) recoveries outside QC limits, all 2,4-dinotrophenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits (104%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Sixteen analytes exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. H3206-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RQL and flagged "U".
- Due to method blank contamination, the di-n-butylphthalate and diethylphthalate results in sample J03WCJ9 were raised to the RQL, qualified as undetected and flagged "U".
- Due to matrix spike duplicate (13%) and LCS (8%) recoveries outside QC limits, all 2,4-dinotrophenol results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (104%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Sixteen analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3206	REVIEWER: TLI	Project: 6009270	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate Diethylphthalate	U at RQL	J03CJ9	Method blank contamination
Bis(2-ethylhexyl)phthalate	U at RQL	All	Method blank contamination
2,4-Dinitrophenol	J	All	MSD, LCS and RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD									
Laboratory: LLI	SDG: H3206								
Sample Number		J03CJ9		J03CH3					
Remarks		E. Blank							
Sample Date		6/7/05		6/7/05					
Extraction Date		6/12/05		6/12/05					
Analysis Date		6/14/05		6/14/05					
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	330	U	340	U				
bis(2-Chloroethyl)ether	660	330	U	340	U				
2-Chlorophenol	660	330	U	340	U				
1,3-Dichlorobenzene	660	330	U	340	U				
1,4-Dichlorobenzene	660	330	U	340	U				
1,2-Dichlorobenzene	660	330	U	340	U				
2-Methylphenol	660	330	U	340	U				
2,2'-oxybis(1-chloropropane)	660	330	U	340	U				
3 and/or 4-Methylphenol	660	330	U	340	U				
N-Nitroso-di-n-propylamine	660	330	U	340	U				
Hexachloroethane	660	330	U	340	U				
Nitrobenzene	660	330	U	340	U				
Isophorone	660	330	U	340	U				
2-Nitrophenol	660	330	U	340	U				
2,4-Dimethylphenol	660	330	U	340	U				
bis(2-Chloroethoxy)methane	660	330	U	340	U				
2,4-Dichlorophenol	660	330	U	340	U				
1,2,4-Trichlorobenzene	660	330	U	340	U				
Naphthalene	660	330	U	340	U				
4-Chloroaniline	660	330	U	340	U				
Hexachlorobutadiene	660	330	U	340	U				
4-Chloro-3-methylphenol	660	330	U	340	U				
2-Methylnaphthalene	660	330	U	340	U				
Hexachlorocyclopentadiene	660	330	U	340	U				
2,4,6-Trichlorophenol	660	330	U	340	U				
2,4,5-Trichlorophenol*	660	840	U	850	U				
2-Chloronaphthalene	660	330	U	340	U				
2-Nitroaniline*	660	840	U	850	U				
Dimethylphthalate	660	330	U	340	U				
Acenaphthylene	660	330	U	340	U				
2,6-Dinitrotoluene	660	330	U	340	U				

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD									
Laboratory: LLI	SDG: H3206								
Sample Number		J03CJ9		J03CH3					
Remarks		E. Blank							
Sample Date		6/7/05		6/7/05					
Extraction Date		6/12/05		6/12/05					
Analysis Date		6/14/05		6/14/05					
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	840	U	850	U				
Acenaphthene	660	330	U	340	U				
2,4-Dinitrophenol*	660	840	UJ	850	UJ				
4-Nitrophenol*	660	840	U	850	U				
Dibenzofuran	660	330	U	340	U				
2,4-Dinitrotoluene	660	330	U	340	U				
Diethylphthalate	660	660	U	340	U				
4-Chlorophenyl-phenyl ether	660	330	U	340	U				
Fluorene	660	330	U	340	U				
4-Nitroaniline*	660	840	U	850	U				
4,6-Dinitro-2-methylphenol*	660	840	U	850	U				
N-Nitrosodiphenylamine	660	330	U	340	U				
4-Bromophenyl-phenyl ether	660	330	U	340	U				
Hexachlorobenzene	660	330	U	340	U				
Pentachlorophenol*	660	840	U	850	U				
Phenanthrene	660	330	U	340	U				
Anthracene	660	330	U	340	U				
Carbazole	660	330	U	340	U				
Di-n-butylphthalate	660	660	U	340	U				
Fluoranthene	660	330	U	340	U				
Pyrene	660	330	U	340	U				
Butylbenzylphthalate	660	330	U	340	U				
3,3'-Dichlorobenzidine	660	330	U	340	U				
Benzo(a)anthracene	660	330	U	340	U				
Chrysene	660	330	U	340	U				
bis(2-Ethylhexyl)phthalate	660	660	U	660	U				
Di-n-octylphthalate	660	330	U	340	U				
Benzo(b)fluoranthene	660	330	U	340	U				
Benzo(k)fluoranthene	660	330	U	340	U				
Benzo(a)pyrene	660	330	U	340	U				
Indeno(1,2,3-cd)pyrene	660	330	U	340	U				
Dibenz(a,h)anthracene	660	330	U	340	U				
Benzo(g,h,i)perylene	660	330	U	340	U				

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List — Report Date: 06/16/05 16:10

RFW Batch Number: 0506L713 — Client: TNUHANFORD B05-018 H3206 — Work Order: 11343606001 — Page: 1a

	Cust ID:	J03CJ9	J03CH3	J03CH3	J03CH3	SBLKLB	SBLKLB BS
Sample Information	RFW#:	007	013	013 MS	013 MSD	05LE0489-MB1	05LE0489-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	61 %	50 %	81 %	81 %	62 %	86 %
	2-Fluorobiphenyl	63 %	50 %	88 %	86 %	70 %	88 %
	Terphenyl-d14	77 %	64 %	96 %	94 %	77 %	96 %
	Phenol-d5	71 %	55 %	90 %	81 %	72 %	89 %
	2-Fluorophenol	58 %	45 %	75 %	72 %	59 %	81 %
	2,4,6-Tribromophenol	71 %	49 %	119 %	118 %	78 %	106 %
		fl	fl	fl	fl	fl	fl
Phenol		330 U	340 U	88 %	84 %	330 U	86 %
bis(2-Chloroethyl)ether		330 U	340 U	86 %	78 %	330 U	83 %
2-Chlorophenol		330 U	340 U	82 %	70 %	330 U	81 %
1,3-Dichlorobenzene		330 U	340 U	74 %	73 %	330 U	77 %
1,4-Dichlorobenzene		330 U	340 U	72 %	74 %	330 U	79 %
1,2-Dichlorobenzene		330 U	340 U	79 %	80 %	330 U	81 %
2-Methylphenol		330 U	340 U	85 %	85 %	330 U	85 %
2,2'-oxybis(1-Chloropropane)		330 U	340 U	84 %	77 %	330 U	78 %
4-Methylphenol		330 U	340 U	84 %	82 %	330 U	78 %
N-Nitroso-di-n-propylamine		330 U	340 U	81 %	82 %	330 U	80 %
Hexachloroethane		330 U	340 U	72 %	76 %	330 U	77 %
Nitrobenzene		330 U	340 U	79 %	75 %	330 U	80 %
Isophorone		330 U	340 U	76 %	80 %	330 U	78 %
2-Nitrophenol		330 U	340 U	77 %	78 %	330 U	78 %
2,4-Dimethylphenol		330 U	340 U	68 %	80 %	330 U	72 %
bis(2-Chloroethoxy)methane		330 U	340 U	81 %	82 %	330 U	82 %
2,4-Dichlorophenol		330 U	340 U	78 %	78 %	330 U	78 %
1,2,4-Trichlorobenzene		330 U	340 U	78 %	76 %	330 U	79 %
Naphthalene		330 U	340 U	72 %	72 %	330 U	73 %
4-Chloroaniline		330 U	340 U	89 %	88 %	330 U	87 %
Hexachlorobutadiene		330 U	340 U	86 %	89 %	330 U	90 %
4-Chloro-3-methylphenol		330 U	340 U	83 %	86 %	330 U	80 %
2-Methylnaphthalene		330 U	340 U	83 %	84 %	330 U	84 %
Hexachlorocyclopentadiene		330 U	340 U	73 %	72 %	330 U	69 %
2,4,6-Trichlorophenol		330 U	340 U	72 %	73 %	330 U	70 %
2,4,5-Trichlorophenol		840 U	850 U	89 %	84 %	830 U	80 %

*= Outside of EPA CLP QC limits.

10/1/05

0000113

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1b

Cust ID:	J03CJ9	J03CH3	J03CH3	J03CH3	SBLKLB	SBLKLB BS
RFW#:	007	013	013 MS	013 MSD	05LE0489-MB1	05LE0489-MB1
2-Chloronaphthalene	330 U	340 U	82 %	81 %	330 U	80 %
2-Nitroaniline	840 U	850 U	84 %	87 %	830 U	80 %
Dimethylphthalate	330 U	340 U	87 %	87 %	330 U	79 %
Acenaphthylene	330 U	340 U	82 %	82 %	330 U	78 %
2,6-Dinitrotoluene	330 U	340 U	91 %	92 %	330 U	81 %
3-Nitroaniline	840 U	850 U	95 %	96 %	830 U	89 %
Acenaphthene	330 U	340 U	84 %	84 %	330 U	79 %
2,4-Dinitrophenol	840 U J	850 U J	41 %	13 * %	830 U	8 * %
4-Nitrophenol	840 U	850 U	61 %	61 %	830 U	57 %
Dibenzofuran	330 U	340 U	85 %	88 %	330 U	82 %
2,4-Dinitrotoluene	330 U	340 U	88 %	88 %	330 U	80 %
Diethylphthalate	660 ~~46~~ JB U	340 U	90 %	91 %	30 J	79 %
4-Chlorophenyl-phenylether	330 U	340 U	86 %	89 %	330 U	83 %
Fluorene	330 U	340 U	85 %	85 %	330 U	78 %
4-Nitroaniline	840 U	850 U	84 %	79 %	830 U	79 %
4,6-Dinitro-2-methylphenol	840 U	850 U	90 %	77 %	830 U	58 %
N-Nitrosodiphenylamine (1)	330 U	340 U	75 %	79 %	330 U	71 %
4-Bromophenyl-phenylether	330 U	340 U	90 %	94 %	330 U	85 %
Hexachlorobenzene	330 U	340 U	108 %	108 %	330 U	95 %
Pentachlorophenol	840 U	850 U	102 %	107 %	830 U	88 %
Phenanthrene	330 U	340 U	87 %	90 %	330 U	81 %
Anthracene	330 U	340 U	87 %	91 %	330 U	80 %
Carbazole	330 U	340 U	100 %	100 %	330 U	88 %
Di-n-butylphthalate	660 ~~85~~ JB U	340 U	95 %	97 %	19 J	86 %
Fluoranthene	330 U	340 U	95 %	99 %	330 U	86 %
Pyrene	330 U	340 U	79 %	79 %	330 U	78 %
Butylbenzylphthalate	330 U	340 U	85 %	85 %	330 U	83 %
3,3'-Dichlorobenzidine	330 U	340 U	101 %	100 %	330 U	97 %
Benzo(a)anthracene	330 U	340 U	75 %	73 %	330 U	71 %
Chrysene	330 U	340 U	77 %	76 %	330 U	74 %
bis(2-Ethylhexyl)phthalate	660 ~~190~~ JB U	660 ~~75~~ JB U	81 %	78 %	38 J	80 %
Di-n-octyl phthalate	330 U	340 U	80 %	80 %	330 U	81 %
Benzo(b)fluoranthene	330 U	340 U	102 %	102 %	330 U	103 %
Benzo(k)fluoranthene	330 U	340 U	76 %	72 %	330 U	73 %
Benzo(a)pyrene	330 U	340 U	92 %	88 %	330 U	86 %
Indeno(1,2,3-cd)pyrene	330 U	340 U	105 %	102 %	330 U	94 %
Dibenz(a,h)anthracene	330 U	340 U	104 %	101 %	330 U	93 %
Benzo(g,h,i)perylene	330 U	340 U	111 %	104 %	330 U	89 %

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

10/11/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B05-018
LVL #: 0506L713
SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00
Date Received: 06-09-2005

SEMIVOLATILE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 06-12-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 06-14-2005.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in these samples.
4. All surrogate recoveries were within acceptance criteria.
5. One (1) of one hundred twenty-eight (128) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. The method blank contained the common laboratory contaminants Diethylphthalate, Bis (2-Ethylhexy) phthalate and Di-n-butylphthalate at levels less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

6/28/05
Date

som\gorup\data\bna\tnu-hanford\0506-713.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 05MS200

Initiator: Jim Daley
Date: 15 June 2005
Client: ZNU Hanford B05-018

Batch: 05061713
Samples: MS 6 Spikes
Method: SW846/MCAWW/CLP/

Parameter: SV
Matrix: Soil
Prep Batch: 05LE0489

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

New LCS Spiking Procedure
Several Spike Recoveries low
JAD WE 16 June 2005

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____ NARRATE
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: 6/15/05

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 6/28/05 Other Explanation:

✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
X	X Project Mgr: Stone/Johnson/Hasiett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	X	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

000017

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 4 of 4
Collector Doug Bowers	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code Air Quality
Project Designation Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location Horse Shoe Landfill		SAF No. B05-018	Data Turnaround 7 day
Ice Chest No. SRC 03 106	Field Logbook No. EL 1173-5	COA R602702000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A050 238		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 [2,4-Dichlorophenoxyacetic acid]	Pesticides - 8081	PCBs - 8082				
Sample No.	Matrix *	Sample Date	Sample Time							
J03CJ8	SOIL	6-7-05	0933					X			#15
J03CJ9	SOIL	6-7-05	0730	X	X	X	X	X	X		Full suite

0600018

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time 6-7-05 1615	Received By/Stored In Ref 2C 3728	Date/Time 6-7-05 1615
Relinquished By/Removed From REF 2C 3728	Date/Time 6805 1030	Received By/Stored In [signature]	Date/Time 6805 1030
Relinquished By/Removed From [signature] ERC	Date/Time 6805 1030	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6905 1000	Received By/Stored In [signature]	Date/Time 6-9-05 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) [Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc]; Mercury - 7471 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 6 8 05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquid
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 1 of 4
Collector Doug Bowers	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code / Data Turnaround Air Quality : 7 day
Project Designation Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location Horse Shoe Landfill		SAF No. B05-018	
Ice Chest No. ERC 03106	Field Logbook No. EL 1173-5	COA R602702000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A0501238		Bill of Lading/Air Bill No. 8225 05 FC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 (2,4-Dichlorophenoxyacetic acid)	Pesticides - 8081	PCBs - 8082				

Sample No.	Matrix *	Sample Date	Sample Time									
J03CH3	SOIL	6-7-05	0741	X	X	X	X	X	X			stock #10
J03CH4	SOIL		0752					X				#1
J03CH5	SOIL		0755					X				2
J03CH6	SOIL		0759					X				3
J03CH7	SOIL		0801					X				4

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	6-7-05/1615	Ref 2C 3728	6-7-05/1615
REF 2C 3728	6805 1030	SDGMC Lab	6805 1030
SDGMC Lab ERC	6805 1030	FED EX	
Fed Ex	6-9-05 1000		6-9-05 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) [Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc]; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2C on 6/8/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solid
DL=Drum Liquid
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: HL 600-270			DATA PACKAGE: H3206		
VALIDATOR: TLR		LAB: LLI		DATE: 10/1/05	
			SDG: H3206		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J03CH3 J03CJ9					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) .... Yes No N/A (N/A circled)

Calibration blank results acceptable? (Levels D, E) .... Yes No N/A (N/A circled)

Laboratory blanks analyzed? .... Yes No N/A (Yes circled)

Laboratory blank results acceptable? .... Yes No N/A (No circled)

Field/trip blanks analyzed? (Levels C, D, E) .... Yes No N/A (Yes circled; No circled; N/A crossed out)

Field/trip blank results acceptable? (Levels C, D, E) .... Yes No N/A (Yes circled; N/A crossed out) field

Transcription/calculation errors? (Levels D, E) .... Yes No N/A (N/A circled)

Comments: ~~diethylphthalate~~ ~~trip~~ [illegible]
diethylphthalate – U at RQL J9 10h
di-n-butylphthalate – U at RQL J9
bis(2-ethylhexyl)phthalate – U at RQL – all

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? .... Yes No N/A (Yes circled)

Surrogate/system monitoring compound recoveries acceptable? .... Yes No N/A (Yes circled)

Surrogates traceable? (Levels D, E) .... Yes No N/A (N/A circled)

Surrogates expired? (Levels D, E) .... Yes No N/A (N/A circled)

MS/MSD samples analyzed? .... Yes No N/A (Yes circled)

MS/MSD results acceptable? .... Yes No N/A (No circled)

MS/MSD standards NIST traceable? (Levels D, E) .... Yes No N/A (N/A circled)

MS/MSD standards? (Levels D, E) .... Yes No N/A (N/A circled)

LCS/BSS samples analyzed? .... Yes No N/A (Yes circled)

LCS/BSS results acceptable? .... Yes No N/A (No circled)

Standards traceable? (Levels D, E) .... Yes No N/A (N/A circled)

Standards expired? (Levels D, E) .... Yes No N/A (N/A circled)

Transcription/calculation errors? (Levels D, E) .... Yes No N/A (N/A circled)

Performance audit sample(s) analyzed? .... Yes No N/A (No circled)

Performance audit sample results acceptable? .... Yes No N/A (N/A circled)

Comments: MSD – 2,4-dinitrophenol – 13% J all no PAS
LCS – " " 8% – J all

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed?	(Yes)	No	N/A
MS/MSD RPD values acceptable?	Yes	(No)	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
MS/MSD standards expired? (Levels D, E)	Yes	No	(N/A)
Field duplicate RPD values acceptable?	Yes	No	(N/A)
Field split RPD values acceptable?	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: 2,4-dinitrophenol - 10420 - J all

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed?	Yes	No	(N/A)
Iinternal standard areas acceptable?	Yes	No	(N/A)
Internal standard retention times acceptable?	Yes	No	(N/A)
Standards traceable?	Yes	No	(N/A)
Standards expired?	Yes	No	(N/A)
Transcription/calculation errors?	Yes	No	(N/A)

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved?	(Yes)	No	N/A
Sample holding times acceptable?	(Yes)	No	N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	(N/A)
Compound quantitation acceptable? (Levels D, E)	Yes	No	(N/A)
Results reported for all requested analyses?	(Yes)	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	(N/A)
Samples properly prepared? (Levels D, E)	Yes	No	(N/A)
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes	No	(N/A)
Detection limits meet RDL?	Yes	(No)	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: 16 over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed?	Yes	No	(N/A)
GPC check performed?	Yes	No	(N/A)
GPC check recoveries acceptable?	Yes	No	(N/A)
GPC calibration performed?	Yes	No	(N/A)
GPC calibration check performed?	Yes	No	(N/A)
GPC calibration check retention times acceptable?	Yes	No	(N/A)
Check/calibration materials traceable?	Yes	No	(N/A)
Check/calibration materials Expired?	Yes	No	(N/A)
Analytical batch QC given similar cleanup?	Yes	No	(N/A)
Transcription/Calculation Errors?	Yes	No	(N/A)

Comments:

Date: 5 October 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Horseshoe Landfill Residual Pesticide Sampling – Soil – Waste Site 600-270
Subject: Inorganics - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Matrix	Media	Validation	Level	Date
J03CJ9	6/7/05		Soil	C		See note 1
J03CH3	6/7/05		Soil	C		See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J03CJ9) was submitted for analysis. Boron, barium, beryllium, cobalt, chromium, copper, manganese, vanadium and zinc were detected in the field blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (49%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. The silver, antimony and selenium results in sample J03CH3 exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. H3206 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike recovery outside QC limits (49%), all antimony results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

The silver, antimony and selenium results in sample J03CH3 exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: H3206	REVIEWER: TLI	Project: 600-270	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	J	All	MS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD									
Laboratory: LLI	SDG: H3206								
Sample Number		J03CJ9		J03CH3					
Remarks		E. Blank							
Sample Date		6/7/05		6/7/05					
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.43	U				
Arsenic	10	0.35	U	2.7					
Boron		0.49		2.4					
Barium	2	0.99		90.1					
Beryllium		0.02		0.38					
Cadmium	0.2	0.02	U	0.14	U				
Cobalt		0.09		8.1					
Chromium	1	0.13		9.0					
Copper		0.13		12.7					
Mercury	0.2	0.01	U	0.02	U				
Manganese		2.3		391					
Molybdenum		0.12	U	0.76	U				
Nickel		0.17	U	11.4					
Lead	5	0.19	U	4.7					
Antimony	0.6	0.31	UJ	1.9	UJ				
Selenium	1	0.38	U	2.3	U				
Vanadium		0.13		51.9					
Zinc	1	1.7		46.6					

0000140

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 LVL LOT #: 0506L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J03CJ9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Boron, Total	0.49	MG/KG	0.18	1.0
		Barium, Total	0.99	MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.008	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Cobalt, Total	0.09	MG/KG	0.07	1.0
		Chromium, Total	0.13	MG/KG	0.05	1.0
		Copper, Total	0.13	MG/KG	0.06	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	2.3	MG/KG	0.02	1.0
		Molybdenum, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
		Antimony, Total	0.31 u	MG/KG	0.31	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Vanadium, Total	0.13	MG/KG	0.05	1.0
		Zinc, Total	1.7	MG/KG	0.04	1.0

10/1/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 LVL LOT #: 0506L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J03CH3	Silver, Total	0.43 u	MG/KG	0.43	6.0
		Arsenic, Total	2.7	MG/KG	2.1	6.0
		Boron, Total	2.4	MG/KG	1.1	6.0
		Barium, Total	90.1	MG/KG	0.09	6.0
		Beryllium, Total	0.38	MG/KG	0.05	6.0
		Cadmium, Total	0.14 u	MG/KG	0.14	6.0
		Cobalt, Total	8.1	MG/KG	0.43	6.0
		Chromium, Total	9.0	MG/KG	0.33	6.0
		Copper, Total	12.7	MG/KG	0.38	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	391	MG/KG	0.09	6.0
		Molybdenum, Total	0.76 u	MG/KG	0.76	6.0
		Nickel, Total	11.4	MG/KG	1.0	6.0
		Lead, Total	4.7	MG/KG	1.2	6.0
		Antimony, Total	1.9 u	MG/KG	1.9	6.0
		Selenium, Total	2.3 u	MG/KG	2.3	6.0
		Vanadium, Total	51.9	MG/KG	0.28	6.0
		Zinc, Total	46.6	MG/KG	0.24	6.0

10/1/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B05-018
LVL#: 0506L713
SDG/SAF#: H3206/B05-018

W.O.#: 11343-606-001-9999-00
Date Received: 06-09-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Sample J03CH3 was analyzed with a 6-fold dilution for ICP metals due to sample matrix.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J03CH3	Manganese	6000	101.9
	Antimony	600	103.4

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Judy Stone

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/8/08
Date

jjw/m06-713

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B05-018-001	Page 4 of 4

Collector: Doug Bowers	Company Contact: Doug Bowers — Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code — Data Turnaround
Project Designation: Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location: Horse Shoe Landfill	SAF No.: B05-018	Air Quality — 7 day
Ice Chest No.: ERC 03 106	Field Logbook No.: EL 1173-5 — COA: R602702000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A050 238	Bill of Lading/Air Bill No.: See EOSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	250mL	250mL	500mL	120mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 (2,4-Dichlorophenoxyacetic acid)	Pesticides - 8081	PCBs - 8082				

Sample No.	Matrix *	Sample Date	Sample Time										
J03CJ8	SOIL	6-7-05	0831					X				#15	
J03CJ9	SOIL	6-7-05	0730	X	X	X	X	X	X			Full suite	

000016

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	6-7-05 / 1615	Ref 2C 3728	6-7-05 / 1615
REF 2C 3728	6805 1030	[signature]	6805 1030
[signature] ERC	6805 1030	FED EX	
FedEx	6905 1000	[signature]	6-9-05 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 6/8/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquid
T=Tissue
Wl=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B05-018-001	Page 1 of 4
Collector: Doug Bowers	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: Air Quality / 7 day
Project Designation: Horseshoe Landfill Residual Pesticide Sampling - Soil	Sampling Location: Horse Shoe Landfill		SAF No.: B05-018	
Ice Chest No.: ERC 03106	Field Logbook No.: EL 1173-5	COA: R602702000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050238		Bill of Lading/Air Bill No.: 922 05 PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None F	Cool 4C A	Cool 4C B	Cool 4C E	Cool 4C D	Cool 4C C					
Type of Container	aG	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250mL	250mL	250mL	500mL	120mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro-Herbicides - EPA8151 (2,4-Dichlorophenoxyacetic acid)	Pesticides - 8081	PCBs - 8082					

Sample No.	Matrix *	Sample Date	Sample Time									
J03CH3	SOIL	6-7-05	0741	X	X	X	X	X	X			stockpile
J03CH4	SOIL		0752					X				#1
J03CH5	SOIL		0755					X				2
J03CH6	SOIL		0759					X				3
J03CH7	SOIL	↓	0801					X				4

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Doug Bowers Date/Time: Doug Bowers Bowers 6-7-05/1615	Received By/Stored In: REF 2C 3728 Date/Time: 6-7-05/1615
Relinquished By/Removed From: REF 2C 3728 Date/Time: 6805 1030	Received By/Stored In: SGOALES/ERC Date/Time: 6805 1030
Relinquished By/Removed From: SGOALES/ERC Date/Time: ERC 6805 1030	Received By/Stored In: FED EX Date/Time:
Relinquished By/Removed From: Fed Ex Date/Time: 6-7-05 1000	Received By/Stored In: Date/Time: 6-7-05 1000
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2C on 6/8/05

Matrix *: S=Soil; SE=Sediment; SO=Solid; SI=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solid; DL=Drum Liquid; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: HS LF C00-270			DATA PACKAGE: H3206		
VALIDATOR: TLP		LAB: LLI		DATE: 10/1/05	
			SDG: H3206		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J03CH3 J03CJ9					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: Antimony 4990 Jak - MSD no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	(Yes)	No	N/A
Duplicate results acceptable?	(Yes)	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
MS/MSD standards expired? (Levels D, E)	Yes	No	(N/A)
Field duplicate RPD values acceptable?	Yes	No	(N/A)
Field split RPD values acceptable?	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments:_____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	(N/A)
ICP serial dilution %D values acceptable?	Yes	No	(N/A)
ICP post digestion spike required?	Yes	No	(N/A)
ICP post digestion spike values acceptable?	Yes	No	(N/A)
Standards traceable?	Yes	No	(N/A)
Standards expired?	Yes	No	(N/A)
Transcription/calculation errors?	Yes	No	(N/A)

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? .... (Yes) No N/A

Rresults supported in the raw data? (Levels D, E) .... Yes No (N/A)

Samples properly prepared? (Levels D, E) .... Yes No (N/A)

Detection limits meet RDL? .... Yes (No) N/A

Transcription/calculation errors? (Levels D, E) .... Yes No (N/A)

Comments: H3 - silver over
~~[illegible]~~
H3 - antimony over
H3 - selenium over

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 LVL LOT #: 0506L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-013REP	J03CH3	Silver, Total	0.43u	0.43u	NC	6.0
		Arsenic, Total	2.7	2.4	11.8	6.0
		Boron, Total	2.4	1.3	59.5	6.0
		Barium, Total	90.1	78.6	13.6	6.0
		Beryllium, Total	0.38	0.36	7.7	6.0
		Cadmium, Total	0.14u	0.14u	NC	6.0
		Cobalt, Total	8.1	7.3	10.4	6.0
		Chromium, Total	9.0	8.2	9.3	6.0
		Copper, Total	12.7	10.7	17.1	6.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Manganese, Total	391	336	15.0	6.0
		Molybdenum, Total	0.76u	0.76u	NC	6.0
		Nickel, Total	11.4	9.4	19.2	6.0
		Lead, Total	4.7	3.2	38.0	6.0
		Antimony, Total	1.9 u	1.9 u	NC	6.0
		Selenium, Total	2.3 u	2.3 u	NC	6.0
		Vanadium, Total	51.9	45.5	13.1	6.0
		Zinc, Total	46.6	41.5	11.6	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 LVL LOT #: 0506L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0334-LC1	Silver, LCS	49.8	50.0	MG/KG	99.6
		Arsenic, LCS	955	1000	MG/KG	95.5
		Boron, LCS	479	500	MG/KG	95.8
		Barium, LCS	497	500	MG/KG	99.4
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Cadmium, LCS	24.8	25.0	MG/KG	99.2
		Cobalt, LCS	252	250	MG/KG	100.9
		Chromium, LCS	50.6	50.0	MG/KG	101.2
		Copper, LCS	127	125	MG/KG	101.8
		Manganese, LCS	76.0	75.0	MG/KG	101.3
		Molybdenum, LCS	508	500	MG/KG	101.6
		Nickel, LCS	201	200	MG/KG	100.6
		Lead, LCS	250	250	MG/KG	100.2
		Antimony, LCS	295	300	MG/KG	98.5
		Selenium, LCS	932	1000	MG/KG	93.2
		Vanadium, LCS	246	250	MG/KG	98.6
		Zinc, LCS	99.3	100	MG/KG	99.3
LCS1	05C0142-LC1	Mercury, LCS	6.4	6.2	MG/KG	102.7

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 LVL LOT #: 0506L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-013	J03CH3	Silver, Total	3.8	0.43u	3.9	97.4	6.0
		Arsenic, Total	158	2.7	157	98.8	6.0
		Boron, Total	72.8	2.4	78.5	89.7	6.0
		Barium, Total	226	90.1	157	86.6	6.0
		Beryllium, Total	4.3	0.38	3.9	100.4	6.0
		Cadmium, Total	3.9	0.14u	3.9	100	6.0
		Cobalt, Total	46.4	8.1	39.2	97.7	6.0
		Chromium, Total	23.9	9.0	15.7	94.9	6.0
		Copper, Total	30.8	12.7	19.6	92.3	6.0
		Mercury, Total	0.16	0.02u	0.16	105.2	1.0
		Manganese, Total	390	391	39.2	-3.1*	6.0
		Molybdenum, Total	76.3	0.76u	78.5	97.2	6.0
		Nickel, Total	48.7	11.4	39.2	95.2	6.0
		Lead, Total	42.0	4.7	39.2	95.2	6.0
		Antimony, Total	19.2	1.9 u	39.2	49.0	6.0
		Selenium, Total	153	2.3 u	157	97.6	6.0
		Vanadium, Total	89.8	51.9	39.2	96.7	6.0
		Zinc, Total	80.6	46.6	39.2	86.7	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 LVL LOT #: 0506L713

WORK ORDER: 11343-606-001-9989-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0334-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	0.45 u	MG/KG	0.45	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	0.05	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.07 u	MG/KG	0.07	1.0
		Copper, Total	0.08 u	MG/KG	0.08	1.0
		Manganese, Total	0.02	MG/KG	0.02	1.0
		Molybdenum, Total	0.16 u	MG/KG	0.16	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Lead, Total	0.25 u	MG/KG	0.25	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.49 u	MG/KG	0.49	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05	MG/KG	0.05	1.0
BLANK1	05C0142-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0